TASK SPECIFIC STATEMENT OF WORK

SYSTEMS ENGINEERING/TECHNICAL ASSISTANCE (SE/TA) SUPPORT FOR RSLP Minuteman Aging Surveillance Program

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0035-02 Amendment

1. SCOPE AND OBJECTIVE

1.1 SCOPE: This statement of work (SOW) delineates the tasks required to provide Systems Engineering and Technical Assistance (SE/TA) support for the RSLP Aging Surveillance (A/S) Program. This support consists of planning, analysis, trade studies, problem resolution, tests, and associated system engineering support tasks necessary for operations of launch vehicle systems and technology.

1.2 Objective: The objective of the A/S Program is to identify age related changes to ensure sufficient lead time for cost effective maintenance, corrective action, and replacement planning for the RSLP booster sets and integrating ordnance hardware.

2. GENERAL BACKGROUND

2.1 This program provides support for the RSLP A/S Program. This program is a continuous effort that is used to determine the safety of the stored RSLP motors and the reliability of these motors for RSLP missions. Current efforts include the static firing of M55, SR19, and M57 motors, along with dissection of the motors and components, motor plugging of older motors to determine propellant properties, and assessment of the lifespan of the current RSLP motor fleet. Support for the A/S program includes providing analysis of the motor components and independent analysis of the A/S contractors work. The program is continuous with four to six planned static fires each year and numerous analysis of the total RSLP motor components.

2.2 CONTRACTOR TASKS

2.3 The individual items in paragraph 3.3, General Work Description, apply to the A/S Program. The basic SOW may cover additional work.

2.4 Additional, Revised, and/or Future Work

2.4.1 The programs and projects primarily use assets from the RSLP inventory. These programs and projects will change annually and will be reflected in future contractual documents.

2.4.2 The nature of the individual programs and projects is directed by Congress, DOD priorities, or R&D accomplishments. Through negotiations, effort can be modified as necessary to reflect new or revised (within scope) R&D projects and objectives.

2.5 General Work Description

2.5.1 Program Office Support

2.5.1.1 Engineering review of contractor activities, in-plant practices and procedures, plans, specifications, test procedures, reports and other program documentation to evaluate compliance with technical guidelines and requirements. Provide technical inputs for the preparation of the contractor SOW.

2.5.1.2 Participate in a technical supporting role, at technical meetings, program status reviews, and other meetings having significant technical content. Assist in establishing and operating technical working groups and tests. Provide technical support at Air Force meetings or briefings with higher headquarters and DOD or outside agencies.

2.5.1.3 Prepare annual update to the RSLP Aging Surveillance Program Management Plan. Update and modify, if required, the scheduled testing for the out years based on the results from previous calendar year testing.

2.5.1.4 Prepare annually State of the Rocket Motor and State of the Ordnance reports. These reports will document the test results and analyses completed during the previous calendar year. Updates/extensions to motor and component useful lifes will be recommended as warranted.

2.5.1.5 Provide monthly reports documenting accomplishments and status of on-going tasks.

2.5.2 Motor Static Test Support

2.5.2.1 Support processing of A/S static test motors. This will include selection of representative asset, review of the logbook and previous NDT history, inspection and nondestructive testing, and motor refurbishment as required. Review and analysis of pre-test excise sample results. Develop and maintain procedures and processing documentation, design and develop support equipment, and assist in associated depot activities. Provide for field activities as requested.

2.5.2.2 Act as test engineer for all motor static tests conducted at the Lakeside (UTTR) facility. These tests will include M55, SR-19, and M57 motors. Activities will include the preparation of the test directive, installation of required instrumentation, supporting government personnel during motor installation and facility checkout, and preparation of the quick look report to be provided to the customer.

2.5.2.3 Perform posttest motor inspection including visual examination of components to determine if unusual or anomalous conditions exist.

2.5.2.4 Prepare detail test reports for the motor static tests as required by the customer. Task will include review/incorporation of the government supplied ballistic performance data, evaluation of motor component performance, incorporation of the test results into the existing A/S database, and evaluation of results with respect to motor service life. In addition, data from the SR-19 facility checkout will be compared to a second SR-19 test to be conducted at Edwards AFB. This will establish the existence, if any, of test facility bias.

3.3.2.5 Support additional special studies static tests as required. Tasks will include those listed in section 3.3.2.1 and 3.3.3.2

3.2.2.6 Provide support in the conduct of static tests performed at facilities other than UTTR. Tasks will include support during motor installation and facility check out, and a review of the on-site quick look data.

3.2.2.7 Provide support for the static firing at Aerojet of an aged SR19 flexseal motor. The tasks will include the coordination of the selection of the asset to be tested and assistance in the processing of the motor prior to test. Participate in the test planning to define the test objectives and review the test results to compare with previous (unaged) flexseal motor firings.

3.2.2.8 Review and comment on contractor generated reports. Provide evaluation of motor and component performance, incorporate test results into the existing A/S data base, and evalute results with respect to motor service life.

3.3.2 Component Testing and Analysis

3.3.3.1 Provide support to component/system bench testing. Review test plans prior to testing to ensure compliance with A/S requirements. Review and comment on reports for the M55, SR-19, M57, and ordnance component bench tests. Provide evaluation of performance, incorporate test results into the existing A/S database, and evaluate results with respect to component service life.

3.3.3.2 Provide support to component structural evaluation tesing. Review and comment on reports. Provide evaluation of performance, incorporate test results into the existing A/S database, and evaluate results with respect to component service life.

3.3.3.3 Provide support to component dissections and material property testing. Review test plans prior to testing to ensure compliance with A/S requirements. Review and comment on reports for the M55, SR-19, and M57 component dissections and material property testing. Provide evaluation of data, incorporate test results into the existing A/S database, and evalute results with respect to component margins of safety and service life.

3.3.3.4 Provide support to motor plugging, excise sampling and material property testing. Review test plans prior to testing to ensure compliance with A/S requirements. Review and comment on reports for the M55, SR-19, and M57 motor material property testing. Provide evaluation of data, incorporate test results into the existing A/S database, and evaluate results with respect to motor margins of safety and service life.

3.3.3.5 Provide input, review and comment on ASCON modeling efforts. This will include updates to existing models as well as new models to be developed for motor components (igniters/gas generators). Tasks will include a review of the basic modeling approach, assessment of the input properties, and the evaluation of the FEM.

3.3.4 Special Studies/Tasks

3.3.4.1 Conduct feasibility study for development of off motor test capability of the SR19 LITVC and Roll Control systems at Hill AFB.

3.3.4.2 Provide support to White Sands Missile Range (WSMR) to explore to feasibility of performing component pre-test environmental testing. This testing will require the ability to perform temperature/humidity cycling, application of transportation and handling loads, and flight vibration simulation.

3.3.4.3 Compile and evaluate previous flight test data for possible inclusion into the A/S database. Applicable data will be included in the State of the Rocket Motor Reports.

3.3.4.4 Perform the effort required to complete the thermal/structural model for the SR19 nozzle. The task will include completion of the structural model for the exit cone and development and completion of a 2-D thermal model for the nozzle entrance cap. The results of the entire effort will be documented in a final report.

3.3.4.5 Conduct/support additional special studies as directed by the customer.

4 Contract Data Requirements List (CDRL)

4.3 Data will be distributed in accordance with CDRLs A001, Technical Report – Study/Services, and A002, Funds and Man-Hour Expenditure Report. Distribution of CDRL item A001 to the government OPR is as follows: five to SMC DET 12/RPE and one letter of

transmittal to SMC DET 12/PKN. Distribution of CDRL item A002 to the government OPR is as follows: one to SMC DET 12/RPE, one to SMC DET 12/PKN, and one to SMC DET 12/FMR.

5 Additional Work Requirements

5.3 The Basic SOW paragraphs for safety requirements, government furnished property, travel and environmental compliance will apply for this tasking. Travel will include visiting various contractors and government installations in Utah, California, and New Mexico.